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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

Office Action Summary	Application No.	Applicant(s)
	10/757,104	ANDERSON ET AL.
	Examiner	Art Unit
	William L. Boddie	2629

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8, 10-21, 23-54 and 63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In an amendment dated, July 23rd, 2007, the Applicant amended claims 1-2, 8, 11, 21, 24, 30, 50, 52, 54 cancelled claims 9, 22, 55-62 and added new claim 63. Currently claims 1-8, 10-21, 23-54 and 63 are pending.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 25 and 26 recites the limitation "said temperature compensated offset voltage" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 12-13, 24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter APA) in view of Romo et al. (US 7,197,225).

With respect to claim 1, APA discloses, a diffractive light device (DLD) (fig. 1) comprising:

a substrate (150 in fig. 1);

a force plate (140 in fig. 1) disposed on said substrate, said force plate configured to produce an electrostatic force in response to an applied voltage (para. 19 of the original specification);

a pixel plate (110 in fig. 1) supported by a flexure (120 in fig. 1) adjacent to said force plate (clear from fig. 1), wherein a position of said pixel plate is controlled by said electrostatic force and by said flexure (para. 19) coupled to said pixel plate to display a pixel of an image (para. 22); and

a circuit (170, 180 in fig. 1) that generates and applies a voltage to said force plate (para. 21).

APA does not expressly disclose a temperature sensor or compensating the applied voltage based on thermal measurements produced by a temperature sensor.

Romo discloses, a temperature sensor (708 in fig. 12) thermally coupled to an a flexing cantilever (fig. 3, for example), without affecting movement of said cantilever, and outputting a thermal measurement indicative of a temperature of said flexing cantilever, wherein said temperature sensor is configured to produce a temperature

compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 9, line 66 – col. 10, line 4).

APA and Romo are analogous art because they are both from the same field of endeavor namely optical MEMS devices operating using electrostatic attraction.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor and compensation means of Romo in the DLD device of APA.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

With respect to claim 12, the only difference between claim 12 and claim 1 is the device is a MEMS device instead of a DLD device. As APA is clearly a MEMS device claim 12 is rejected on the same merits shown above in the rejection of claim 1.

With respect to claim 13, APA and Romo disclose, a MEMS of claim 12 (see above).

APA further discloses, a support post (130 in fig. 1) extruding from said substrate; and

a flexure (120 in fig. 1) coupling said pixel plate (110 in fig. 1) to said support post (130 in fig. 1), wherein said flexure is configured to exert a spring force on said pixel plate opposing said electrostatic force (para. 19).

APA does not expressly disclose, that the thermal effect comprises a change in spring force exerted by a flexure on a pixel plate.

Romo discloses, that a thermal effect comprises a change in the actuation force necessary to affect a change in the cantilever (col. 1, lines 46-48; col. 4, lines 23-27; col. 10, lines 1-4).

At the time of the invention it would have been obvious to one of ordinary skill in the art to also compensate the DLD of APA for a change in spring force as taught by Romo.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

With respect to claim 24, APA discloses, an image display device comprising:

a system controller (180 in fig. 1);

a variable voltage source communicatively coupled to said system controller (170 in fig. 1); and

an array of DLDs (160 in fig. 1) communicatively coupled to said variable voltage source, each DLD of said DLD array (para. 3) including a substrate (150 in fig. 1),

a force plate disposed on said substrate (140 in fig. 1), said force plate configured to produce an electrostatic force in response to a voltage applied by said voltage source (para. 19),

a pixel plate disposed adjacent to said force plate (110 in fig. 1), wherein a position of said pixel plate is determined by said electrostatic force and a flexure coupled to said pixel plate (para. 19).

APA does not expressly disclose a temperature sensor or compensating the applied voltage based on temperature measurements produced by a temperature sensor.

Romo discloses, a temperature sensor (708 in fig. 12) thermally coupled to an a flexing cantilever (fig. 3, for example), without affecting movement of said flexure, and outputting a temperature measurement indicative of a temperature of said flexing cantilever, wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 9, line 66 – col. 10, line 4).

APA and Romo are analogous art because they are both from the same field of endeavor namely optical MEMS devices operating using electrostatic attraction.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor and compensation means of Romo in the DLD device of APA.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

With respect to claim 31, the only difference in scope between claim 31 and claim 1, is the replacement of force plate, pixel plate and temperature with "means for" language. As shown above in the rejection of claim 1, the means provided by Hung, and Romo are seen as sufficiently equivalent to the Applicant's disclosed structure to satisfy the "means for" language of claim 31. For this reason, claim 31 is rejected on the same merits shown above in claim 1.

7. Claims 2-3, 5-8, 14-16, 18-21, 25-26, 28-29, 32-33, 35-38 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter APA) in view of Romo et al. (US 7,197,225) and further in view of McCartney et al. (US 5,088,806).

With respect to claim 2, APA and Romo disclose, the DLD of claim 1 (see above).

Neither APA nor Romo expressly disclose, an offset voltage generator to generate a temperature compensated voltage.

McCartney discloses, a temperature sensor (52 in fig. 5) thermally coupled to a display device (50 in fig. 5), wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 4, lines 18-30), further comprising;

an offset voltage generator (54-56 in fig. 5), wherein said offset voltage generator is configured to generate a temperature compensated offset voltage based on said thermal measurement (col. 3, lines 12-24); and

a summing element for adding said offset voltage to a reference voltage to produce a temperature compensated voltage (col. 4, lines 34-44).

APA, Romo and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by McCartney on the diffractive light device of APA and Romo.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

With respect to claim 3, APA, McCartney and Romo disclose, the DLD of claim 2 (see above).

Neither APA nor McCartney expressly disclose, that the thermal effect comprises a change in spring force exerted by a flexure on a pixel plate.

Romo discloses, that a thermal effect comprises a change in the actuation force necessary to affect a change in the cantilever (col. 1, lines 46-48; col. 4, lines 23-27; col. 10, lines 1-4).

Romo, APA and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to also compensate the DLD of APA and McCartney for a change in spring force as taught by Romo.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

With respect to claim 5, APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said signal digitizer; and

a data storage device (55 in fig. 5) communicatively coupled to said system controller, wherein said data storage device contains a plurality of offset voltage value associated with said digitized thermal measurement (col. 3, lines 18-24).

With respect to claim 6, APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said digitizer, said system controller configured to combine said digitized thermal measurement to a uncompensated digital color count (command word in fig. 5); and

a digital to analog converter (56 in fig. 5) communicatively coupled to said system controller, wherein said digital to analog converter is configured to convert said combined digital signal into a thermally compensated analog voltage.

With respect to claim 7, APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

Neither APA nor Romo expressly disclose a variable voltage source communicatively coupled to said offset voltage generator.

McCartney further discloses, a variable voltage source (56-57 in fig. 5) communicatively coupled to said offset voltage generator, wherein said variable voltage source is configured to generate a temperature compensated offset voltage in response to a command signal received from said offset voltage generator (col. 4, lines 27-30).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the variable voltage circuitry, taught by McCartney on the diffractive light device of APA and Romo.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

With respect to claim 8, APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, wherein said summing element comprises a summing circuit, wherein said summing circuit is configured to combine said temperature compensated offset voltage with each of a plurality color specific voltages (col. 4, lines 34-44) to produce a temperature compensated voltage corresponding to each of a plurality of colors produced by pixel element of said DLD (col. 2, lines 41-43; col. 4, lines 42-44).

With respect to claims 14-16 and 18-21, these claims are seen as sufficiently equivalent to claims 2-3 and 5-8 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-8.

With respect to claims 25-26 and 28-29, these claims are seen as sufficiently equivalent to claims 2-3 and 5-8 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-8.

With respect to claims 32-33 and 35-37, these claims are seen as sufficiently equivalent to claims 2-3 and 5-8 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-8.

With respect to claim 38, APA, Romo and McCartney disclose, the DLD of claim 37 (see above).

McCartney further discloses, wherein said color voltage bias comprises a non-compensated voltage bias (co. 4, lines 30-33).

With respect to claim 63, APA and Romo disclose the MEMS of claim 12 (see above).

APA further discloses, an array of corresponding pixel and force plates (para. 23).

Neither APA nor Romo expressly disclose an offset voltage generator.

McCartney discloses, an offset voltage generator (54-56 in fig. 5), that applies an offset voltage based on said temperature measurement (col. 3, lines 12-24) to a global LCD bias signal used by the LCD electrodes.

APA, when combined with Romo and McCartney discloses, an offset voltage generator (McCartney; 54-56 in fig. 5), that applies an offset voltage based on said temperature measurement (McCartney; col. 3, lines 12-24) to a global MEMS bias signal used by the force plates.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by McCartney on the diffractive light device of APA and Romo.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

8. Claims 10-11, 23, 30 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter APA) in view of Romo et al. (US 7,197,225) and further in view of Mori et al. (US 5,903,251).

With respect to claim 10, APA and Romo disclose, the DLD of claim 1 (see above).

Neither APA nor Romo expressly disclose, that the temperature sensor comprises a thermal sense resistor or a diode bandgap.

Mori discloses, a temperature sensor (5 in fig. 1), comprising a thermal sense resistor (thermistor; col. 4, line 18), thermally coupled to a display device (6 in fig. 1), wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 4, lines 30-37).

APA, Romo and Mori are analogous art because they are both from the same field of endeavor namely, compensating electro-optical devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of APA and Romo.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

With respect to claim 11, APA, Romo and Mori disclose, the DLD of claim 10 (see above).

APA, when modified as taught by Romo and Mori, further discloses wherein said temperature sensor is configured to measure an average temperature of flexures in an array of DLDs (Mori; col. 6, lines 30-45).

With respect to claims 23, 30 and 39, these claims are seen as sufficiently equivalent to claims 10-11 to be rejected on the same merits shown above in the rejection of claims 10-11.

9. Claims 4, 17, 27 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter APA) in view of Romo et al. (US 7,197,225) and McCartney et al. (US 5,088,806) and further in view of Naiki et al. (US 7,038,654).

With respect to claim 4, APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

Neither Hung, Romo nor McCartney disclose, the inner circuitry of the offset voltage generator.

Naiki discloses, wherein an offset voltage generator comprises:

a buffer amplifier (OP2 in fig. 4; fig. 4 is a view of the temperature sensor circuit);

a low pass filter (13 in fig. 10) electrically coupled to said buffer amplifier (col. 11, lines 46-49); and

a scaler (14-15 in fig. 8) electrically coupled to said low pass filter (clear from fig. 8 that all the components are electrically coupled).

Naiki, Romo, APA and McCartney are analogous art because they are all from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the offset voltage circuitry taught by Naiki in the display device of APA, Romo and McCartney.

The motivation for doing so would have been a more accurate temperature sensor with only a negligible measurement error (Naiki; col. 2, lines 1-4).

With respect to claims 17, 27 and 34, APA, Romo and McCartney disclose, the DLD/MEMS of claims 16, 26 and 32 (see above).

These claims are seen as sufficiently equivalent to claim 4 to be rejected on the same merits shown above in the rejection of claim 4.

10. Claims 40, 42, 44-46, 49-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Applicant's Admitted Prior Art (hereinafter APA).

With respect to claim 40, McCartney discloses, a method of compensating for thermal effects in a LCD comprising:

measuring a temperature of said LCD (col. 4, lines 18-19);

generating a temperature compensated offset voltage (col. 4, lines 21-27) associated with an effect said temperature will have on said LCD (slow response time; col. 4, lines 9-15); and

producing a temperature compensated voltage on said LCD using said temperature compensated offset voltage, wherein applying said temperature compensated voltage to said LCD compensates for said thermal effects (col. 4, lines 27-30).

McCartney does not expressly disclose, compensating thermal effects in a DLD.

APA discloses a diffractive light device, which is affected by thermal effects (fig. 1).

APA and McCartney are analogous art because they are both directed to the same problem solving area, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the LCD of McCartney with the DLD of APA for the well-known benefit of the increased contrast possible with DLD devices.

With respect to claim 42, APA and McCartney disclose, the method of claim 40 (see above).

McCartney further discloses, wherein said generating a temperature compensated offset voltage comprises:

providing said signal to an offset voltage generator (54-56 in fig. 5), wherein said offset voltage generator is configured to generate a temperature compensated offset voltage based on said signal (col. 3, lines 12-24).

With respect to claim 44, APA and McCartney disclose, the method of claim 42 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said signal digitizer; and

a data storage device (55 in fig. 5) communicatively coupled to said system controller, wherein said data storage device contains a plurality of offset voltage value associated with said digitized thermal measurement (col. 3, lines 18-24).

With respect to claim 45, APA and McCartney disclose, the method of claim 42 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said digitizer, said system controller configured to combine said digitized thermal measurement to a uncompensated digital color count (command word in fig. 5); and

a digital to analog converter (56 in fig. 5) communicatively coupled to said system controller, wherein said digital to analog converter is configured to convert said combined digital signal into a thermally compensated analog voltage.

With respect to claim 46, APA and McCartney disclose, the method of claim 40 (see above).

McCartney further discloses, wherein said measuring a temperature of said DLD comprises:

thermally coupling a thermal sensor (52 in fig. 3) to a LCD (clear from fig. 5 that the temp sensor is coupled to the LCD); and

sensing a temperature of said LCD (clearly the temperature sensor, senses the temperature of the LCD).

With respect to claim 49, APA and McCartney disclose, the method of claim 40 (see above).

McCartney further discloses, a summing circuit, wherein said summing circuit is configured to combine said temperature compensated offset voltage with a color voltage bias (col. 4, lines 34-44) to produce said temperature compensated voltage.

With respect to claim 50, McCartney discloses, a processor readable medium (55 in fig. 5) having instructions thereon that are executable by a processor for:

sensing a temperature change of a LCD (col. 4, lines 18-20); and

modifying a voltage provided to said LCD in response to said sensed temperature change (col. 4, lines 21-33).

McCartney does not expressly disclose, sensing temperature changes specifically in a DLD.

APA discloses a diffractive light device, which is affected by thermal effects (fig. 1).

APA and McCartney are analogous art because they are both directed to the same problem solving area, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the LCD of McCartney with the DLD of APA for the well-known benefit of the increased contrast possible with DLD devices.

With respect to claim 51, APA and McCartney disclose, the processor readable medium of claim 50 (see above).

McCartney further discloses, wherein said modifying a voltage provided to said DLD comprises:

receiving a signal associated with said sensed temperature change (output of 54 in fig. 5); and

generating a temperature compensated offset voltage based on said signal (col. 4, lines 27-30).

With respect to claim 52, McCartney and APA disclose, the processor readable medium of claim 51 (see above).

McCartney further discloses, wherein said processor readable medium further has instructions thereon that are executable by a processor for:

digitizing said signal (54 in fig. 5);

providing said digitized signal to a data storage device (55 in fig. 5); and

receiving a temperature compensated offset voltage value from said data storage device (col. 3, lines 18-24).

With respect to claim 53, McCartney and APA disclose, the processor readable medium of claim 52 (see above).

McCartney further discloses, wherein said data storage device comprises a data lookup table (col. 4, lines 23-27).

With respect to claim 54, McCartney and APA disclose, the processor readable medium of claim 51 (see above).

McCartney further discloses, wherein said processor readable medium further has instructions thereon that are executable by a processor for:

digitizing said signal (54 in fig. 5);

combining said digitized signal with a digital color count (command word in fig. 5); and

converting said combined signal to an analog voltage (56 in fig. 5).

11. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Applicant's Admitted Prior Art (hereinafter APA) and further in view of Romo et al. (US 7,197,225).

With respect to claim 41, McCartney and APA disclose, the method of claim 40 (see above).

Neither APA nor McCartney expressly disclose, that the thermal effect comprises a change in spring force exerted by a flexure on a pixel plate.

Romo discloses, that a thermal effect comprises a change in the actuation force necessary to affect a change in the cantilever (col. 1, lines 46-48; col. 4, lines 23-27; col. 10, lines 1-4).

Romo, APA and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to also compensate the DLD of APA and McCartney for a change in spring force as taught by Romo.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

12. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Applicant's Admitted Prior Art (hereinafter APA) and further in view of Naiki et al. (US 7,038,654).

With respect to claim 43, McCartney and APA disclose, the method of claim 42 (see above).

Neither APA nor McCartney disclose, a low pass filter.

Naiki discloses, wherein an offset voltage generator comprises:

a buffer amplifier (OP2 in fig. 4; fig. 4 is a view of the temperature sensor circuit);

a low pass filter (13 in fig. 10) electrically coupled to said buffer amplifier (col. 11, lines 46-49); and

a scaler (14-15 in fig. 8) electrically coupled to said low pass filter (clear from fig. 8 that all the components are electrically coupled).

Naiki, APA and McCartney are analogous art because they are all from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the offset voltage circuitry taught by Naiki in the display device of APA and McCartney.

The motivation for doing so would have been a more accurate temperature sensor with only a negligible measurement error (Naiki; col. 2, lines 1-4).

13. Claims 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Applicant's Admitted Prior Art (hereinafter APA) and further in view of Mori et al. (US 5,903,251).

With respect to claim 47, APA and McCartney disclose, the method of claim 46 (see above).

Neither APA nor McCartney expressly disclose what type of temperature sensor is used.

Mori further discloses, wherein said temperature sensor comprises a thermal sense resistor (thermistor; col. 4, line 18).

APA, McCartney and Mori are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of APA and McCartney.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

With respect to claim 48, APA and McCartney disclose, the method of claim 47 (see above).

Neither APA nor McCartney expressly disclose measuring an average temperature of an array of DLDs.

Mori further discloses, wherein said temperature sensor is configured to measure an average temperature of an array of pixels (col. 6, lines 30-45).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of APA and McCartney.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William L. Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

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Wlb
9/17/07

Sumati Lefkowitz

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SUPERVISORY PATENT EXAMINER